FAA William J. Hughes Technical Center

Human Factors Applications

Research and Development Human Factors Laboratory

Overview: The Human Factors Applications group is sponsored by the Office of the Chief Scientist and Technical Advisor for Human Factors (AAR-100) and works directly with the Air Traffic Service and the air traffic integrated product teams (IPTs) to manage the integration of human factors concerns throughout the system development and acquisition process.

The program emphasizes objective risk mitigation research activities at key points during the development and acquisition process to improve quality, effectiveness, and safety of FAA systems. The following are examples of such activities.

Prototyping Standard Terminal Automation Replacement System (STARS) Early Display Configuration (EDC)

A multidisciplinary team lead by ACT-530 completed a rapid prototyping activity to address 98 Human Factors issues identified by the NATCA union with the Early Display configuration of STARS. The group produced several "thin specifications" and furnished a preoperational prototype to the vendor to augment this guidance. The total activity lasted less than 3 months. The changes to the EDC Computer-Human Interface (CHI) improved system usabiltiy and user acceptance. Human factors researchers are also conducting evaluations of advanced display technologies and CHI issues for displaying radar information in air traffic control towers. A major concern is the readability of the displays under varying light conditions.

Prototyping STARS Airway Facilities Monitor and Control (M&C) Workstation

A multidisciplinary team lead by ACT-530 completed a rapid prototyping activity to address 52 Human Factors issues identified by the PASS union with the STARS M&C workstation. The activity led to a consistent application of human factors guidance across the emergency and full service levels of the M&C workstation Computer-Human Interface.

Prototyping Initial STARS Capability

The Human Factors applications group is working with Air Traffic and representative users on the Initial System Capability (ISC) version of STARS. The group is attempting to carry over the CHI from EDC and integrate the additional functionality of STARS through prototyping and periodic evaluation. As with the EDC activity, the team will produce thin specifications and will furnish the preoperational prototype to the vendor.

Virtual Environments STARS Transition and Implementation (T&I) Facility Design and Equipment Layout

ACT-530 is currently working with the STARS T&I team to address human factors concerns regarding the layout of the new STARS hardware. The team is working with representatives from NATCA, PASS, and facility supervisors using the RDHFL virtual environments laboratory to address transition concerns and optimize the layout of facility equipment. The activity will stay just ahead of the STARS waterfall. The products from this activity will include facility drawings, a video walk-through of the facility, and detailed HF reports. The program office will maintain a database of facility specific issues that will be used to guide future activities.

Acquisition Strategy Operational and Supportability Implementation System (OASIS)

Human Factors researchers completed an initial evaluation of work consoles at current Automated Flight Service Stations and provided recommendations for replacement consoles for OASIS in the context of a novel acquisition strategy. The acquisition will include an operational run-off between vendors. The team will evaluate prototype consoles to determine if they meet user needs and human factors criteria. The vendor will be selected based on this evaluation and other programmatic considerations.

For more information on the Human Factors Applications Branch, contact:

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